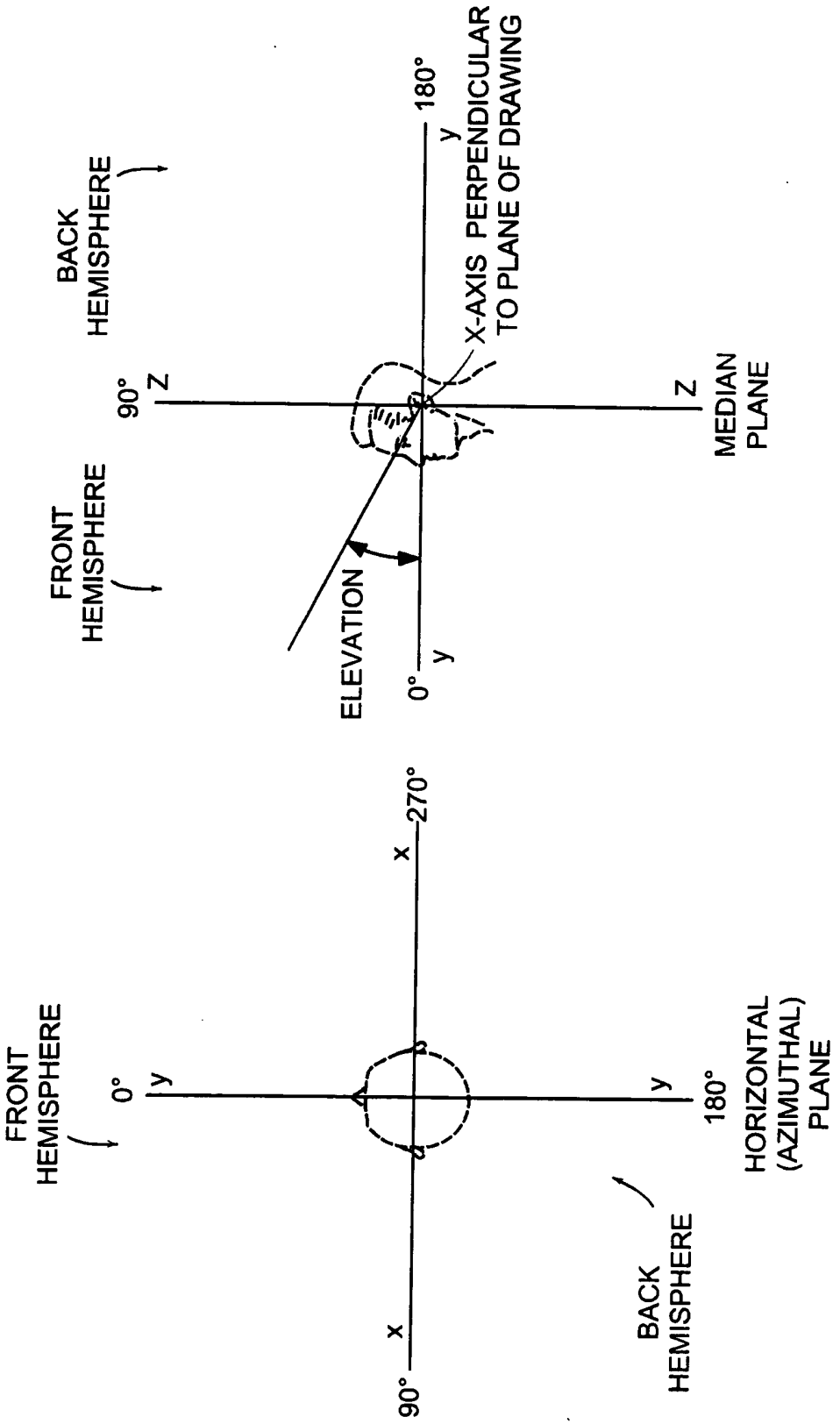

BACK HEMISPHERE
FRONT HEMISPHERE
90°
Z
180°
y
X-AXIS PERPENDICULAR TO PLANE OF DRAWING
Z
MEDIAN PLANE
ELEVATION
0°
y
FRONT HEMISPHERE
0°
y
x
270°
y
180°
HORIZONTAL (AZIMUTHAL) PLANE
x
90°
BACK HEMISPHERE

FIG. 1

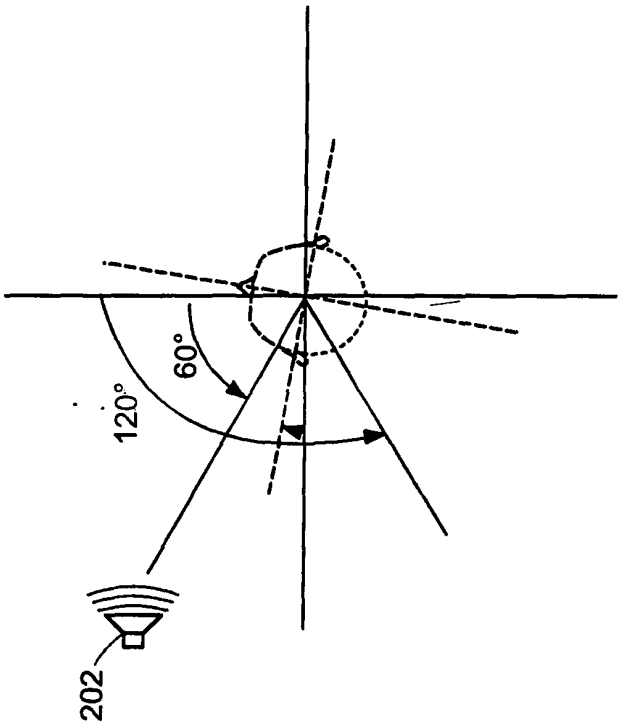


FIG. 2B

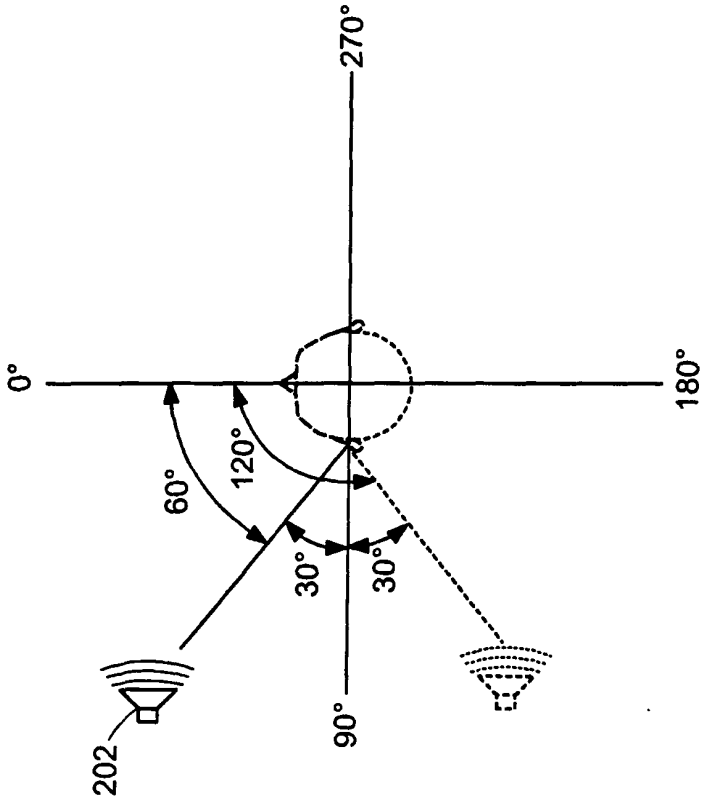


FIG. 2A

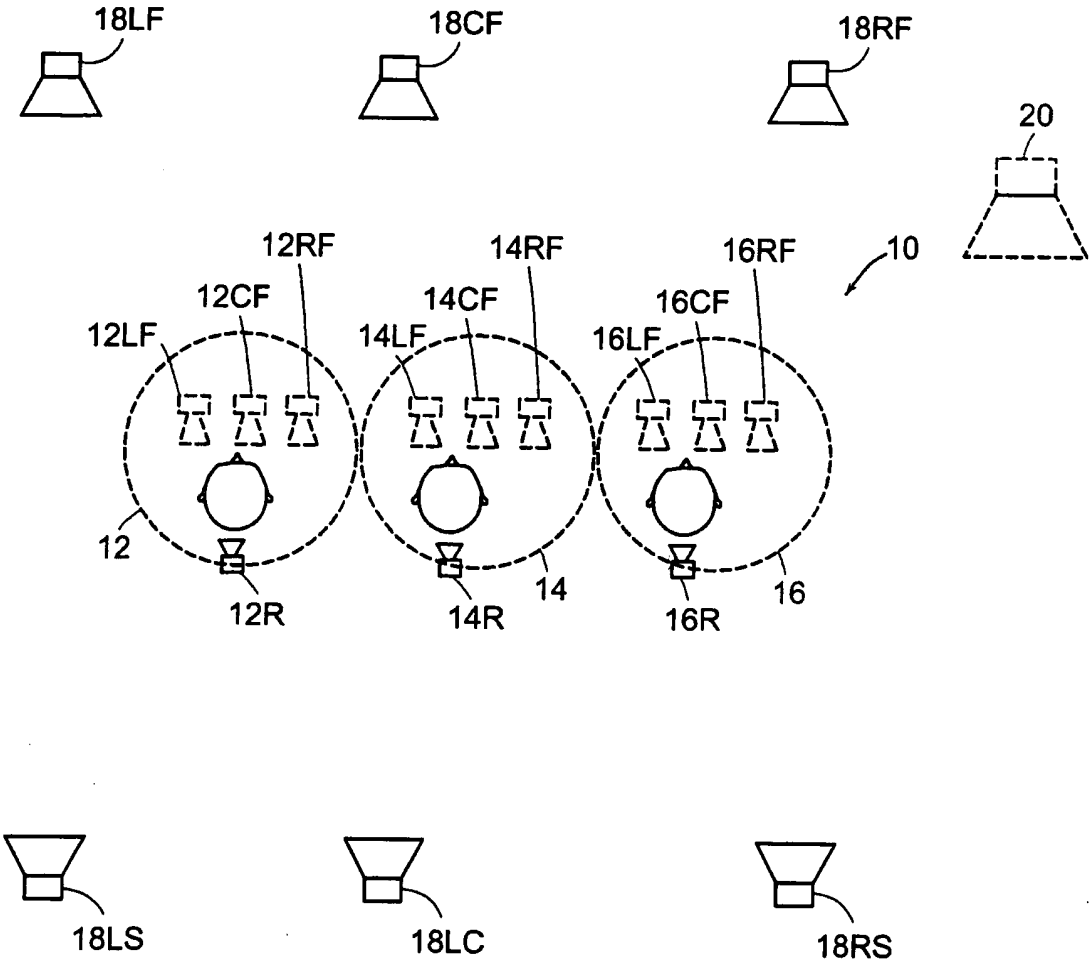

18LF
18CF
18RF
20
10
12RF
14RF
16RF
12CF
14CF
16CF
12LF
14LF
16LF
12
12R
14
14R
16
16R
18LS
18LC
18RS

FIG. 3A

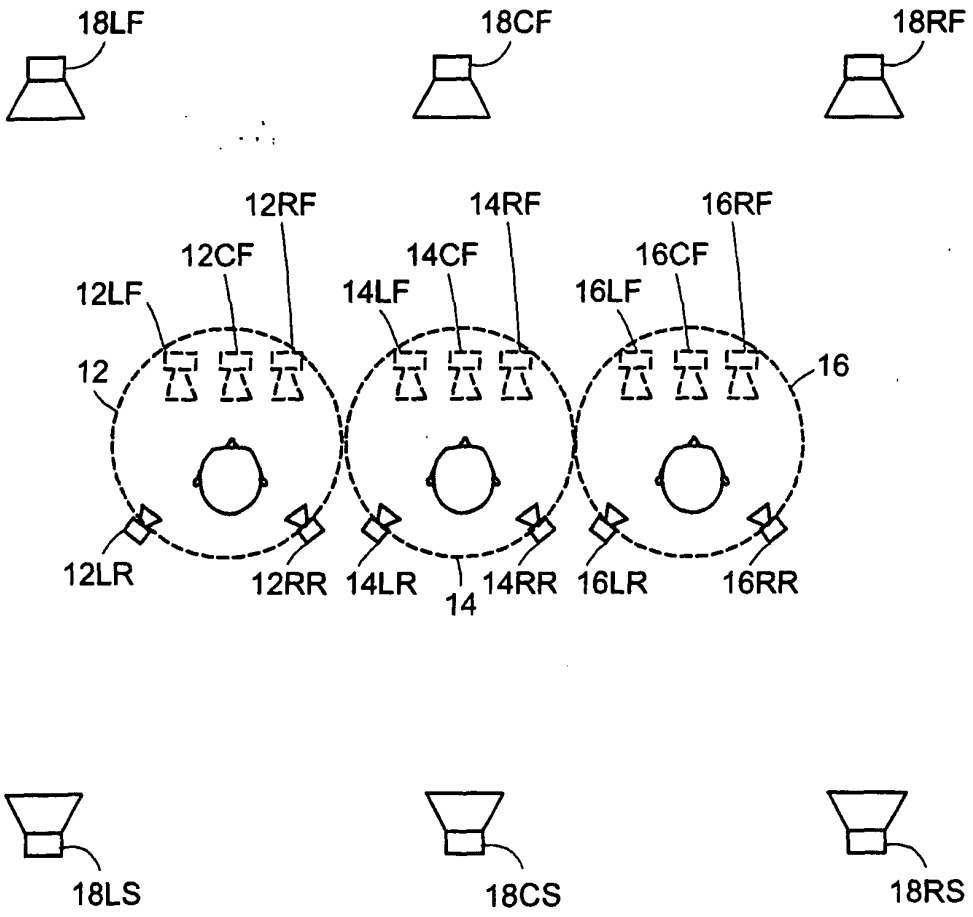

18LF
18CF
18RF
12RF
14RF
16RF
12CF
14CF
16CF
12LF
14LF
16LF
12
16
12LR
12RR
14LR
14
14RR
16LR
16RR
18LS
18CS
18RS

FIG. 3B

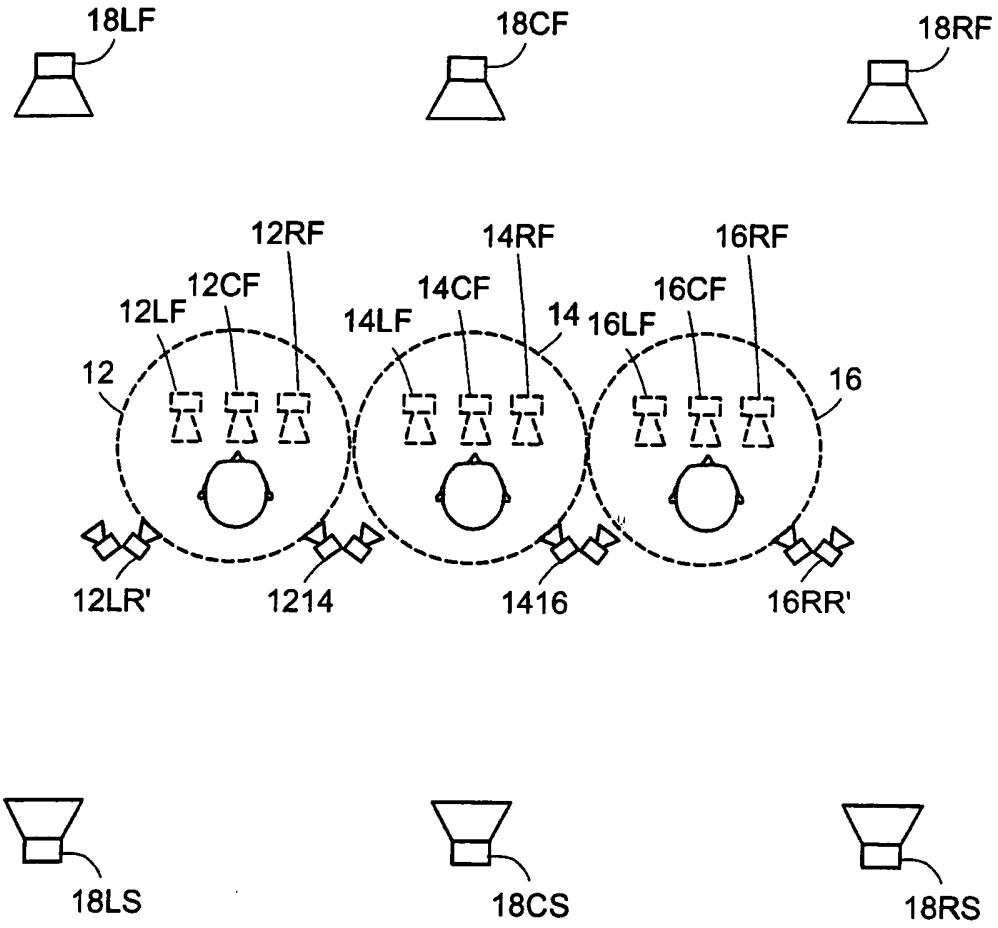

18LF
18CF
18RF
12RF
14RF
16RF
12CF
14CF
16CF
12LF
14LF
14
16LF
12
16
12LR'
1214
1416
16RR'
18LS
18CS
18RS

FIG. 3C

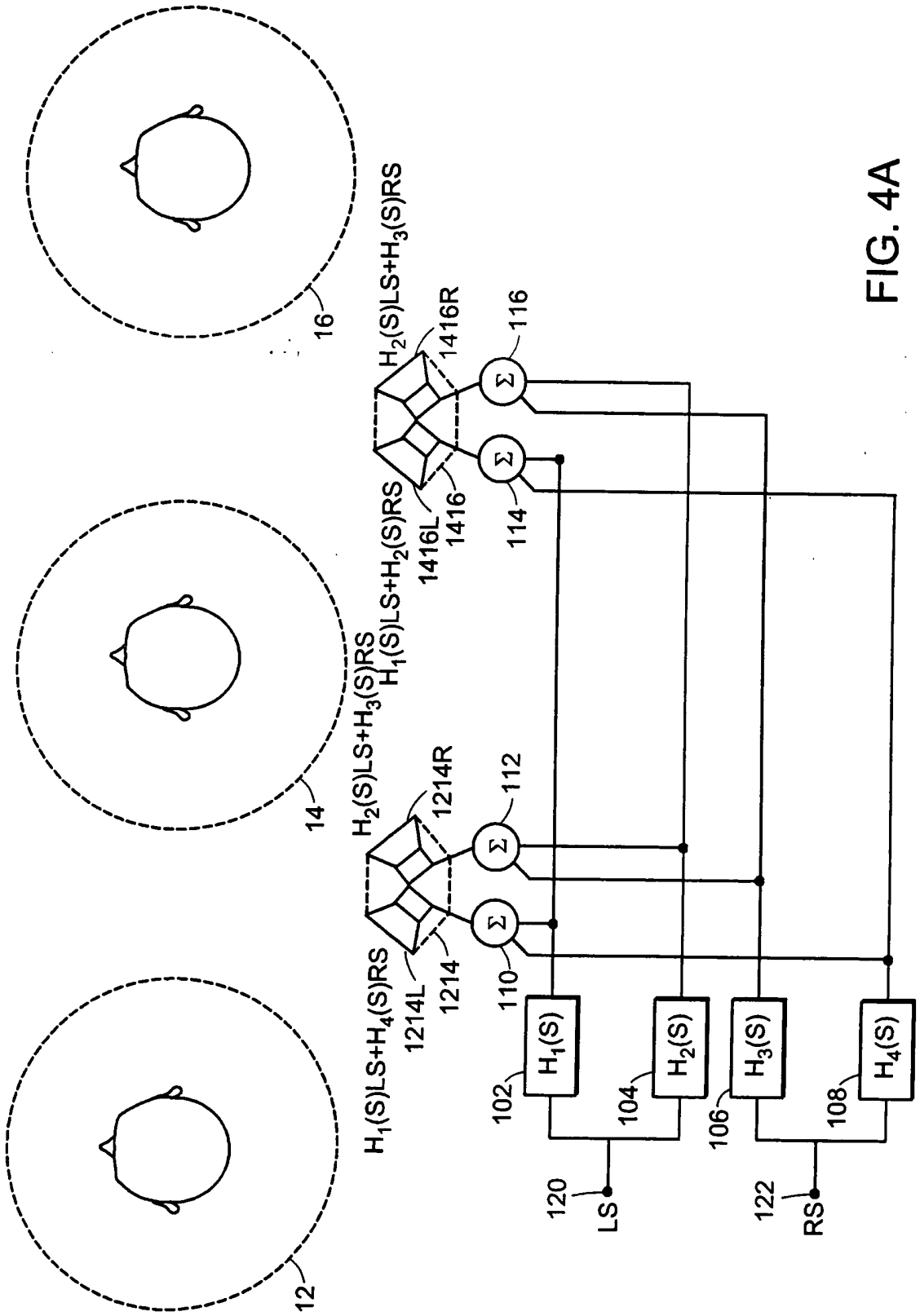

16
14
12
$H_2(S)LS+H_3(S)RS$
1416R
116
$H_1(S)LS+H_2(S)RS$
1416L
1416
114
$H_2(S)LS+H_3(S)RS$
1214R
112
$H_1(S)LS+H_4(S)RS$
1214L
1214
110
$H_1(S)$
$H_2(S)$
$H_3(S)$
$H_4(S)$
102
104
106
108
120
LS
122
RS

FIG. 4A

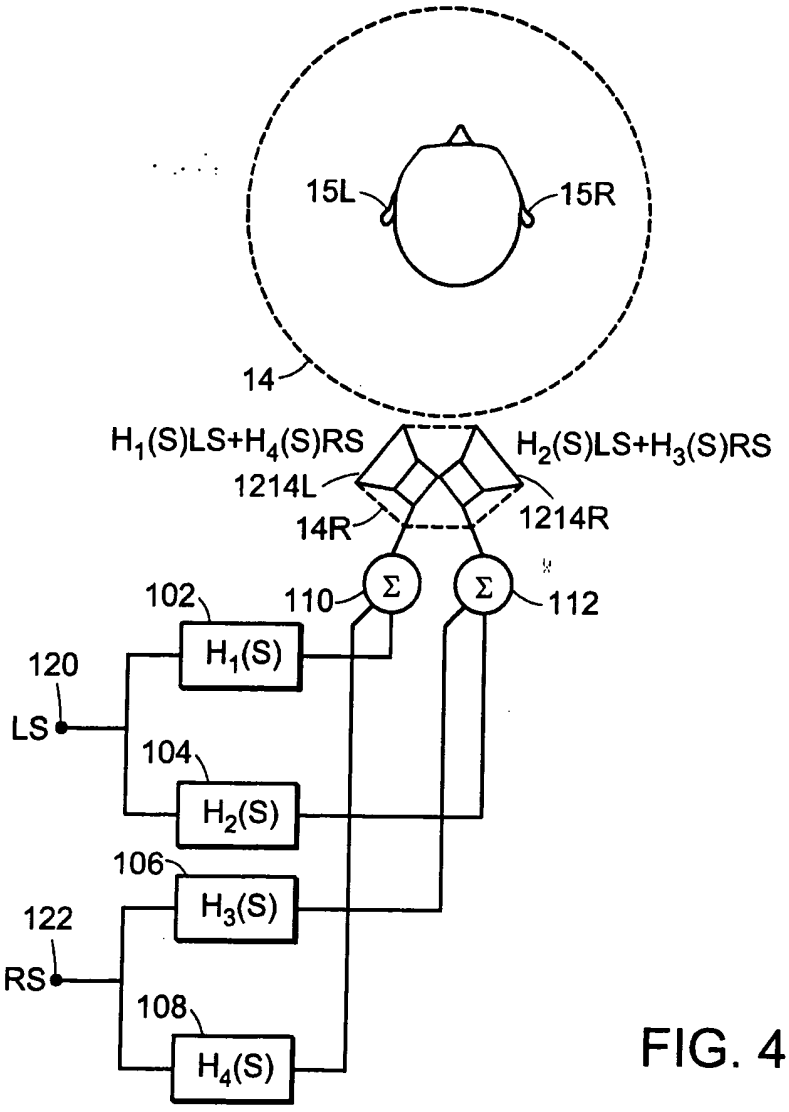

15L
15R
14
$H_1(S)LS+H_4(S)RS$
$H_2(S)LS+H_3(S)RS$
1214L
1214R
14R
Σ
Σ
102
110
112
120
LS
$H_1(S)$
104
$H_2(S)$
106
$H_3(S)$
122
RS
108
$H_4(S)$

FIG. 4B

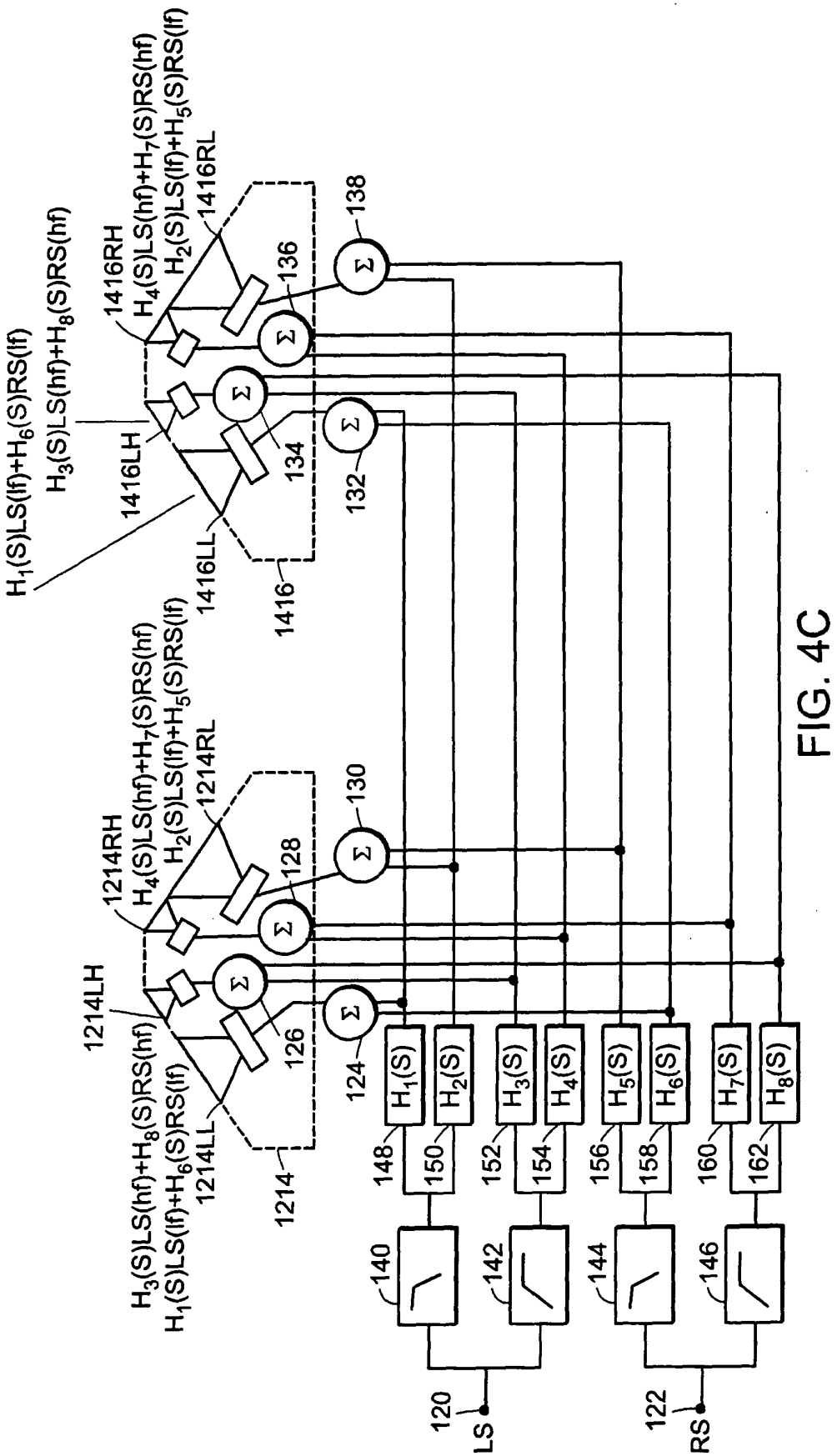

$H_1(S)LS(lf)+H_6(S)RS(lf)$
$H_3(S)LS(hf)+H_8(S)RS(hf)$
1416LH
1416LL
1416
1416RH
1416RL
$H_4(S)LS(hf)+H_7(S)RS(hf)$
$H_2(S)LS(lf)+H_5(S)RS(lf)$
1214LH
1214LL
1214
1214RH
1214RL
$H_3(S)LS(hf)+H_8(S)RS(hf)$
$H_1(S)LS(lf)+H_6(S)RS(lf)$
$H_4(S)LS(hf)+H_7(S)RS(hf)$
$H_2(S)LS(lf)+H_5(S)RS(lf)$
$H_1(S)$
$H_2(S)$
$H_3(S)$
$H_4(S)$
$H_5(S)$
$H_6(S)$
$H_7(S)$
$H_8(S)$
120
LS
122
RS

FIG. 4C

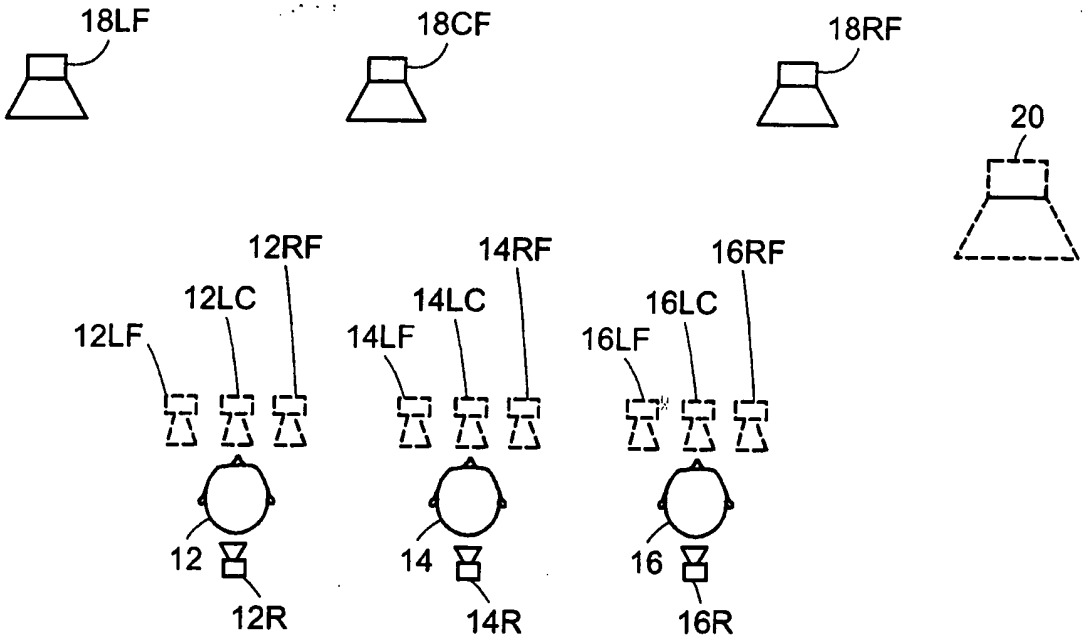

18LF
18CF
18RF
20
12RF
12LC
12LF
14RF
14LC
14LF
16RF
16LC
16LF
12
12R
14
14R
16
16R

FIG. 5A

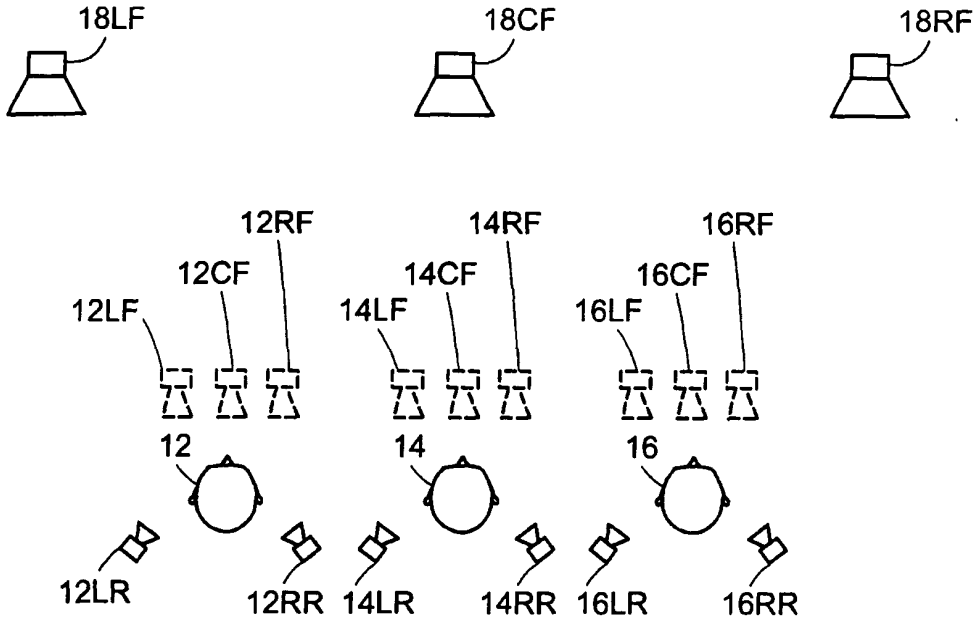

18LF
18CF
18RF
12RF
12CF
12LF
14RF
14CF
14LF
16RF
16CF
16LF
12
14
16
12LR
12RR
14LR
14RR
16LR
16RR

FIG. 5B

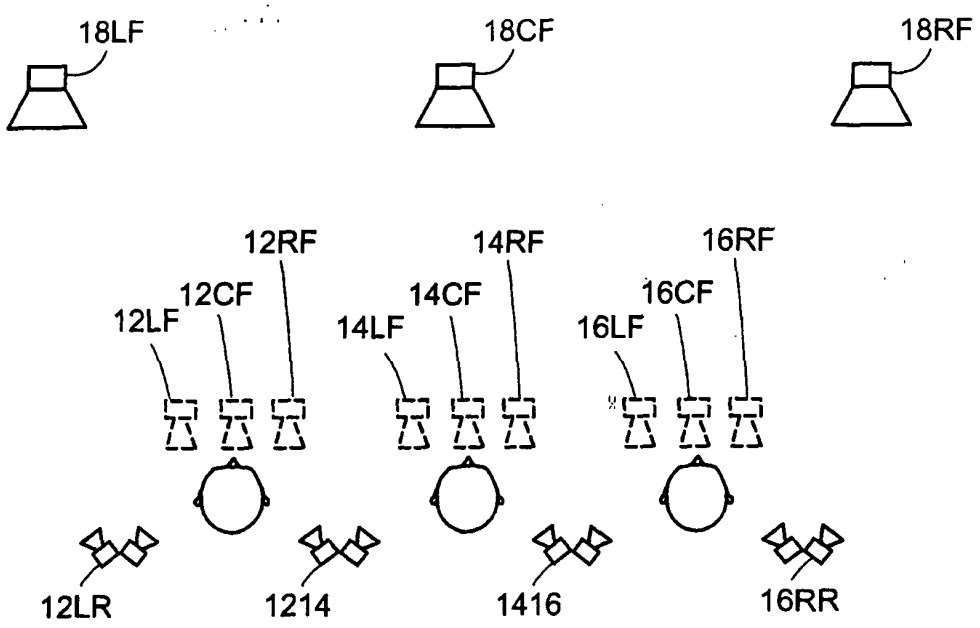

18LF
18CF
18RF
12RF
14RF
16RF
12CF
14CF
16CF
12LF
14LF
16LF
12LR
1214
1416
16RR

FIG. 5C

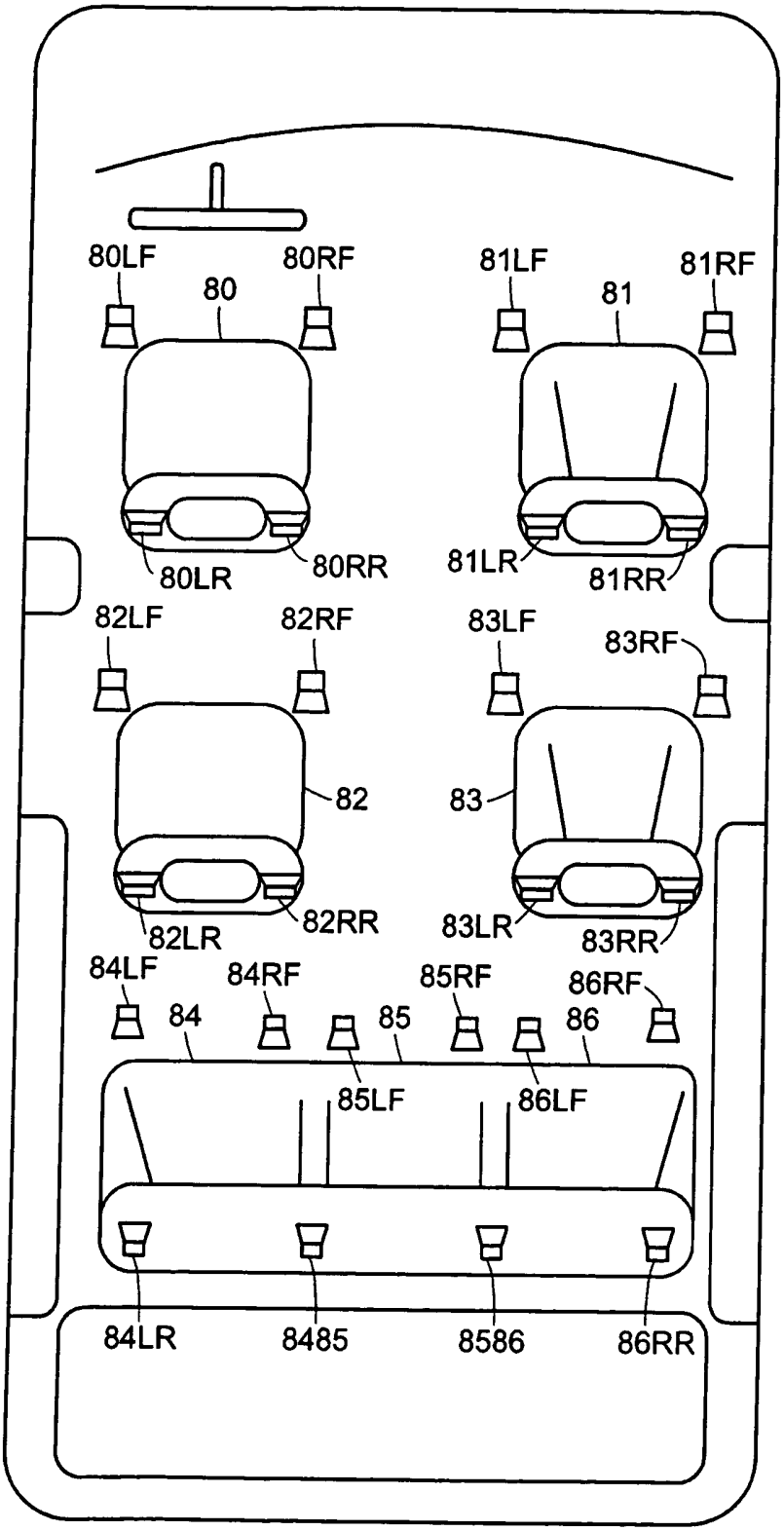

80LF
80RF
80
81LF
81RF
81
80LR
80RR
81LR
81RR
82LF
82RF
83LF
83RF
82
83
82LR
82RR
83LR
83RR
84LF
84RF
85RF
86RF
84
85
86
85LF
86LF
84LR
8485
8586
86RR

FIG. 6

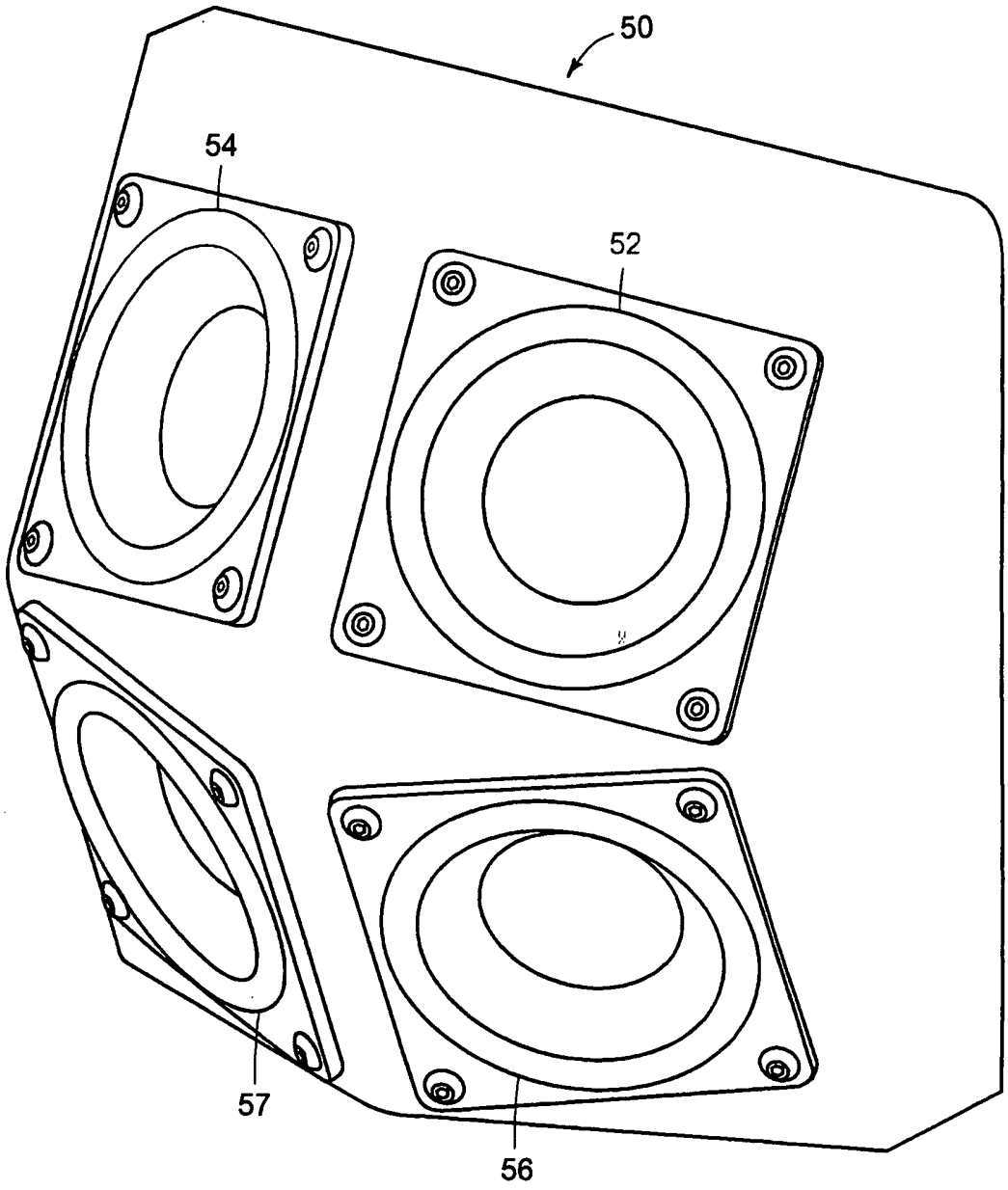


FIG. 7A

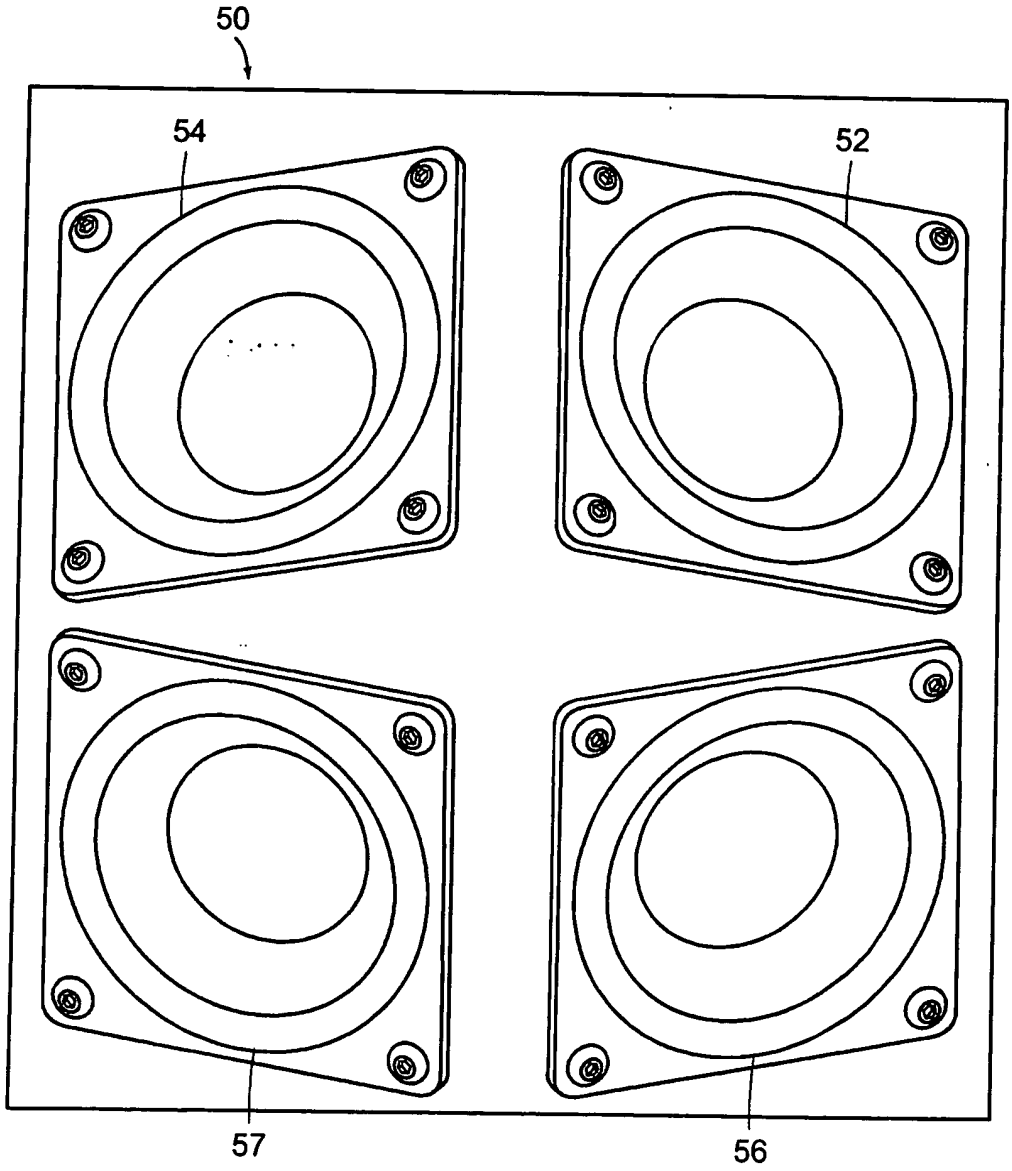


FIG. 7B

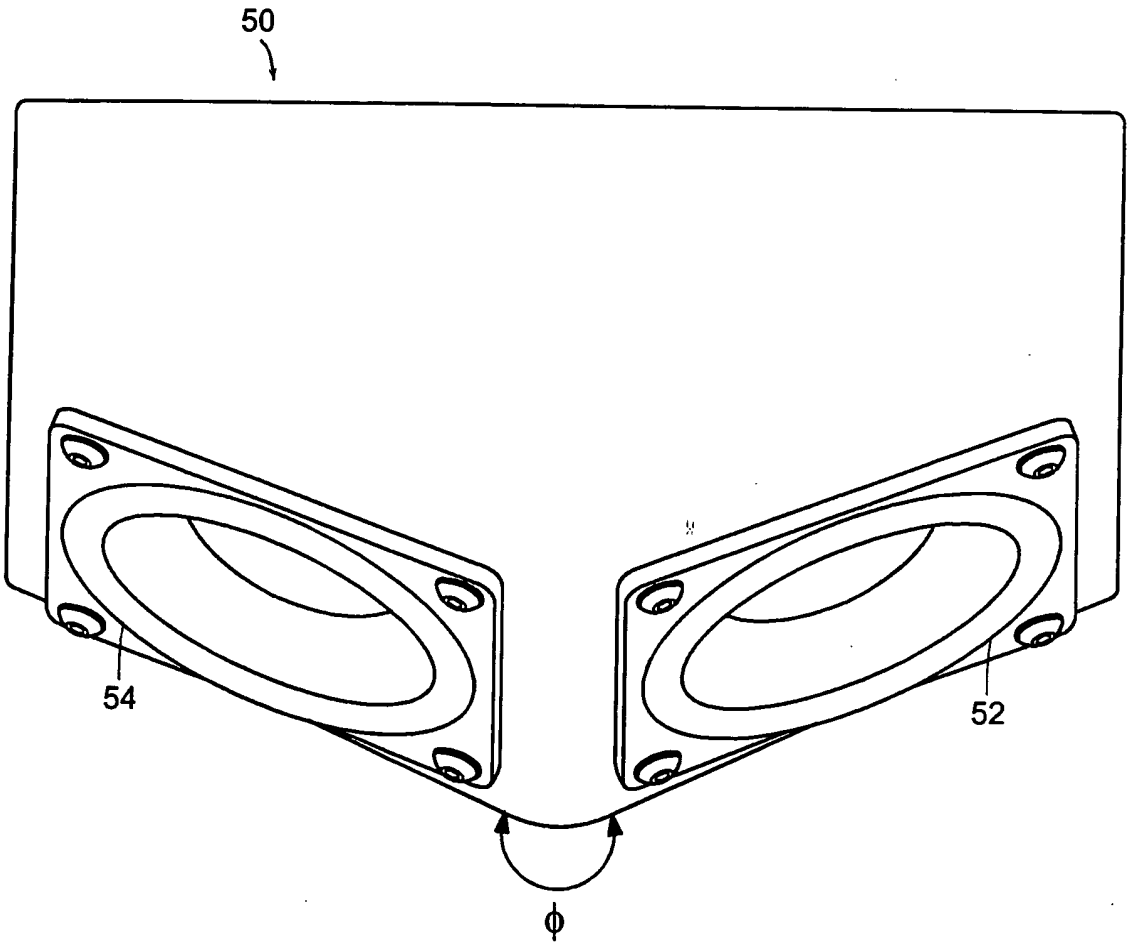


FIG. 7C

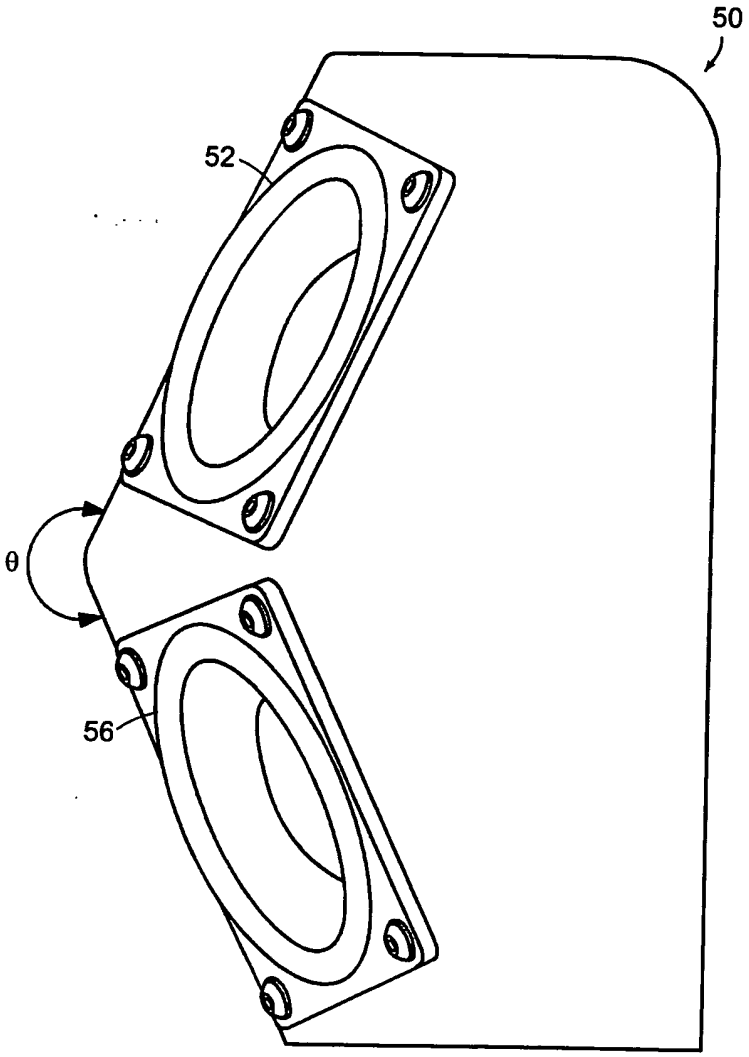


FIG. 7D

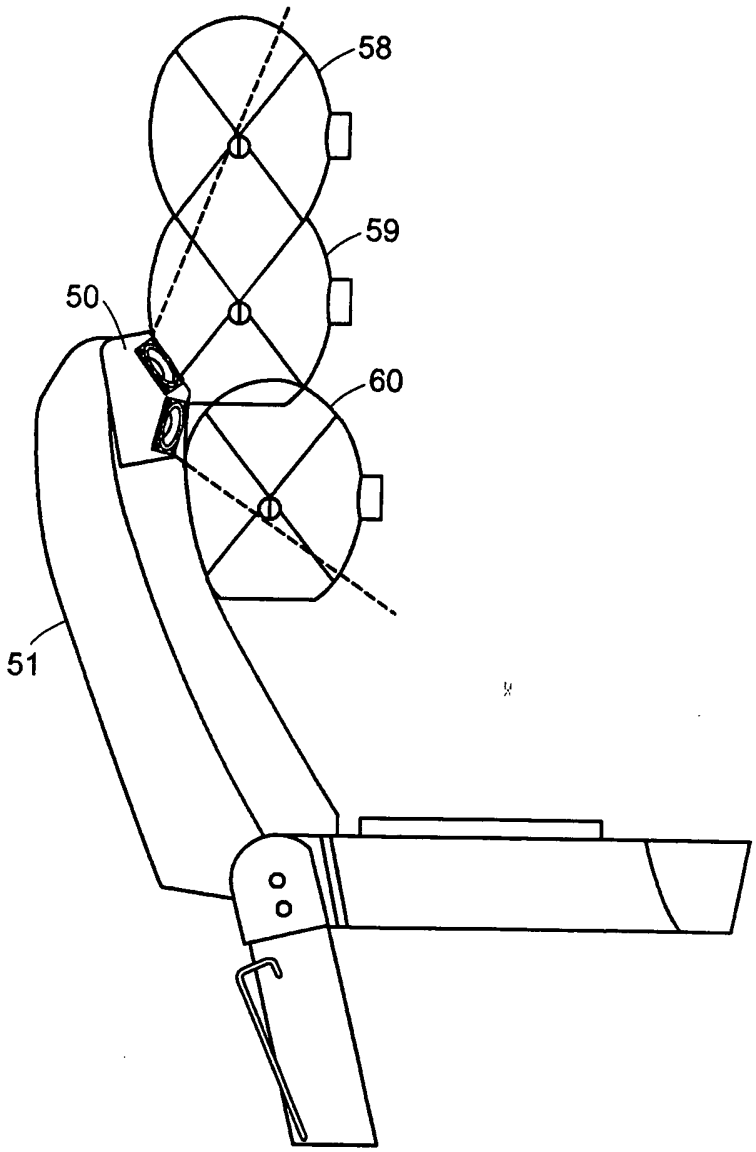


FIG. 7E

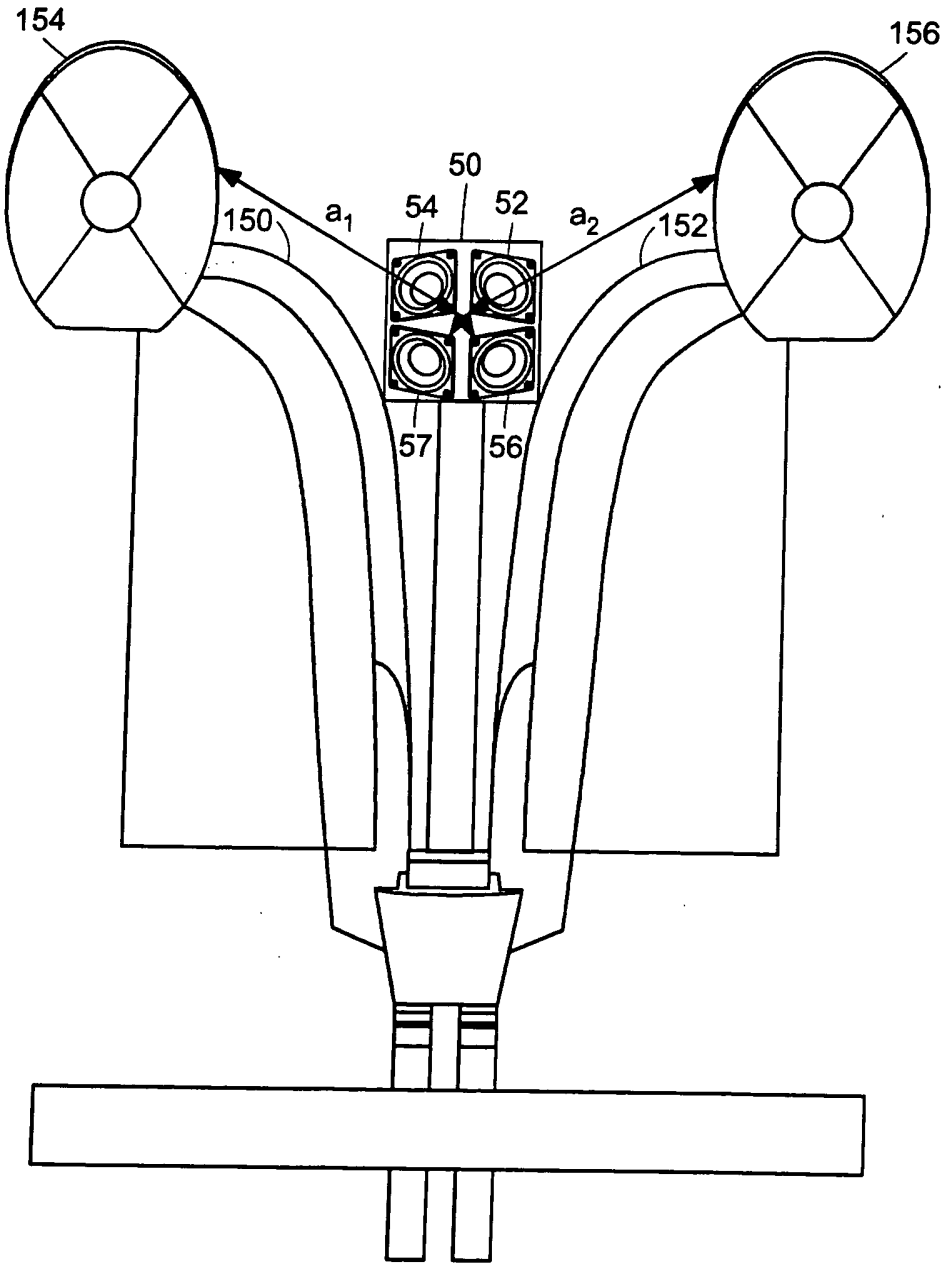


FIG. 7F

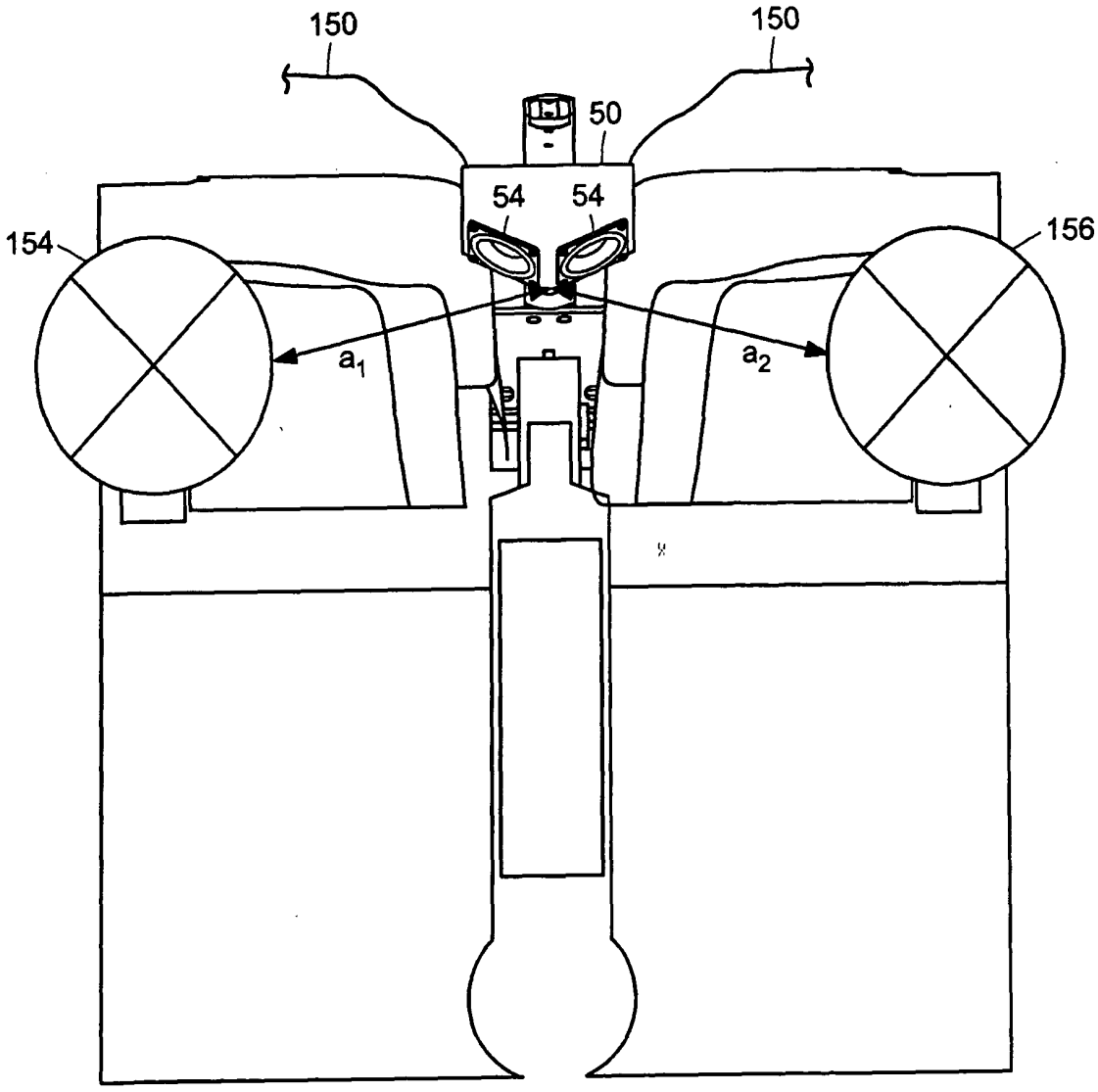


FIG. 7G

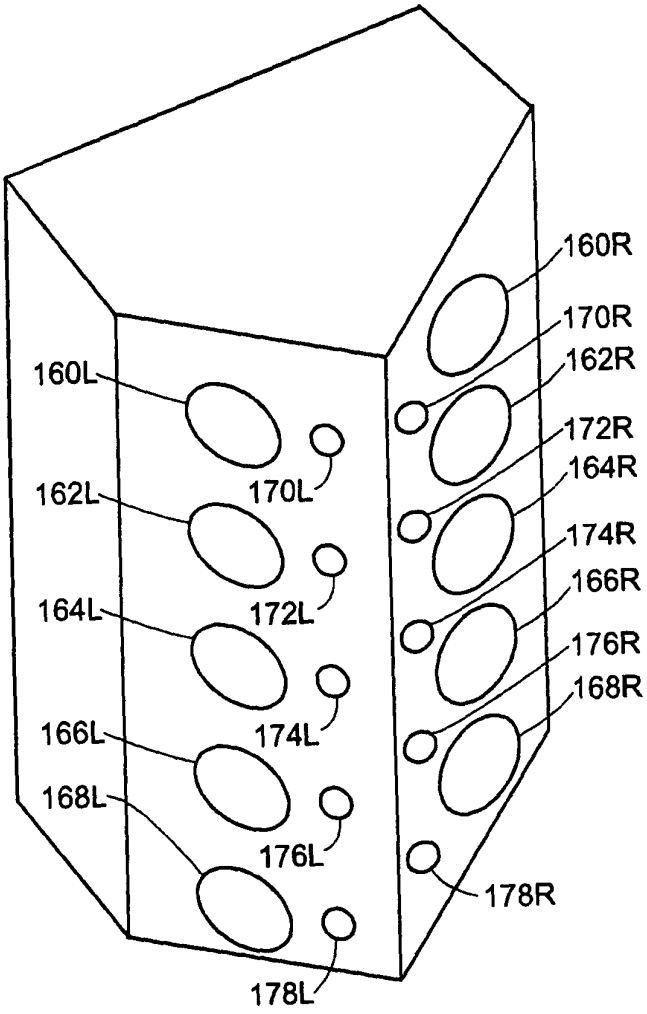

160R
170R
162R
172R
164R
174R
166R
176R
168R
178R
160L
162L
164L
166L
168L
170L
172L
174L
176L
178L

FIG. 7H

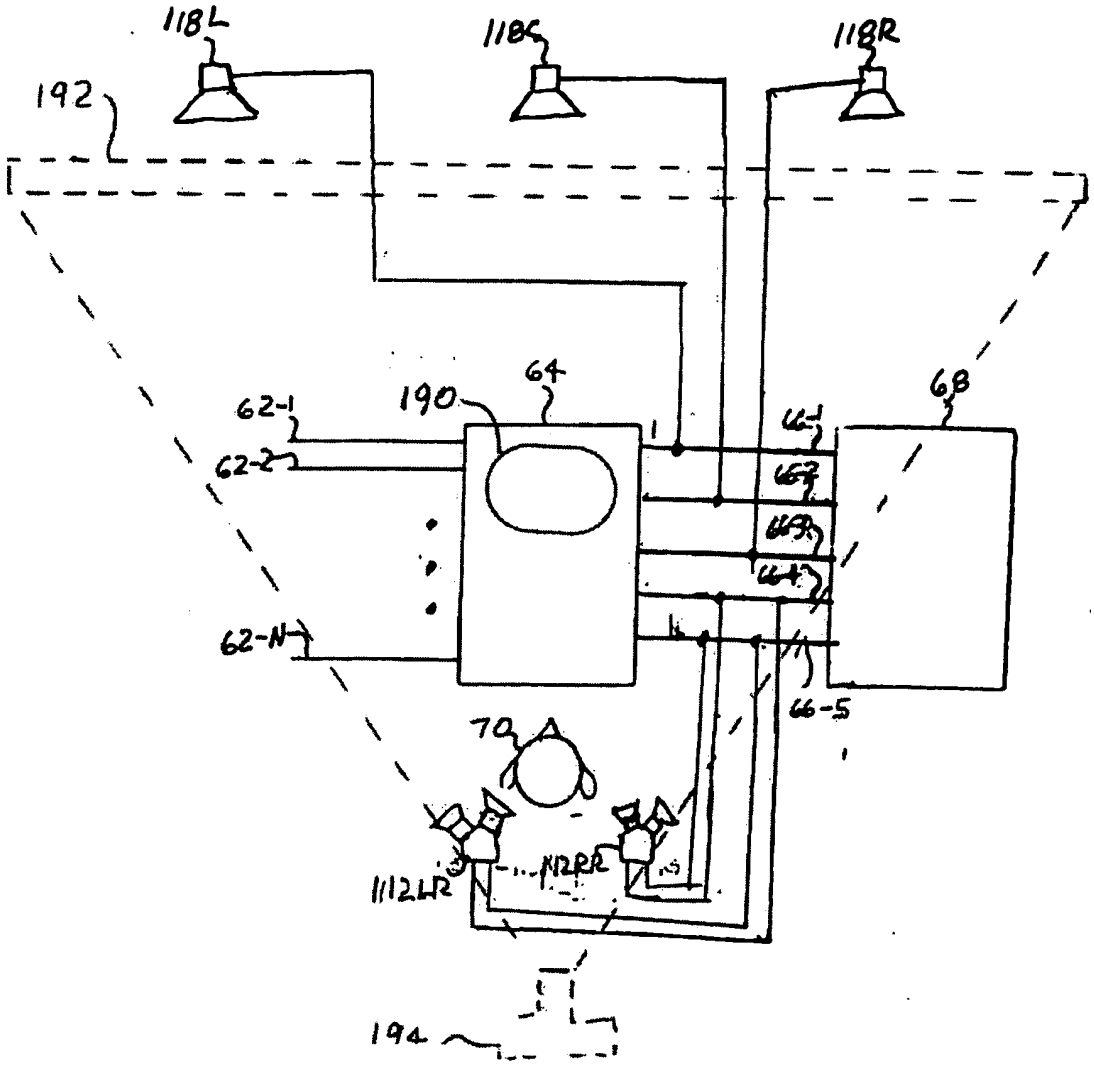
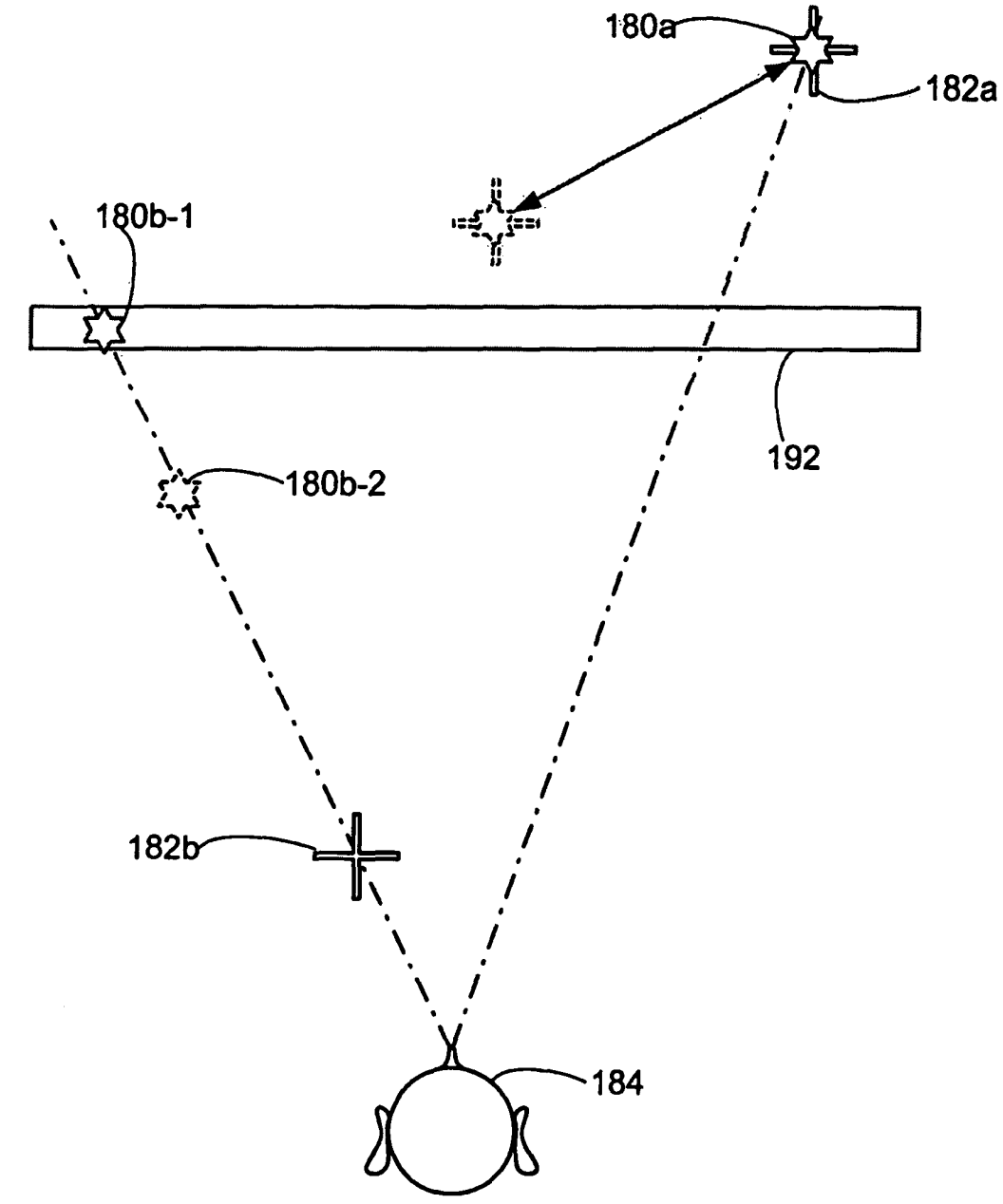

118L
118C
118R
192
64
190
62-1
62-2
62-N
68
66-1
66-2
66-3
66-4
66-5
70
112L
112R
194

FIG. 8A



= Audio Image

= Visual Image

FIG. 8B

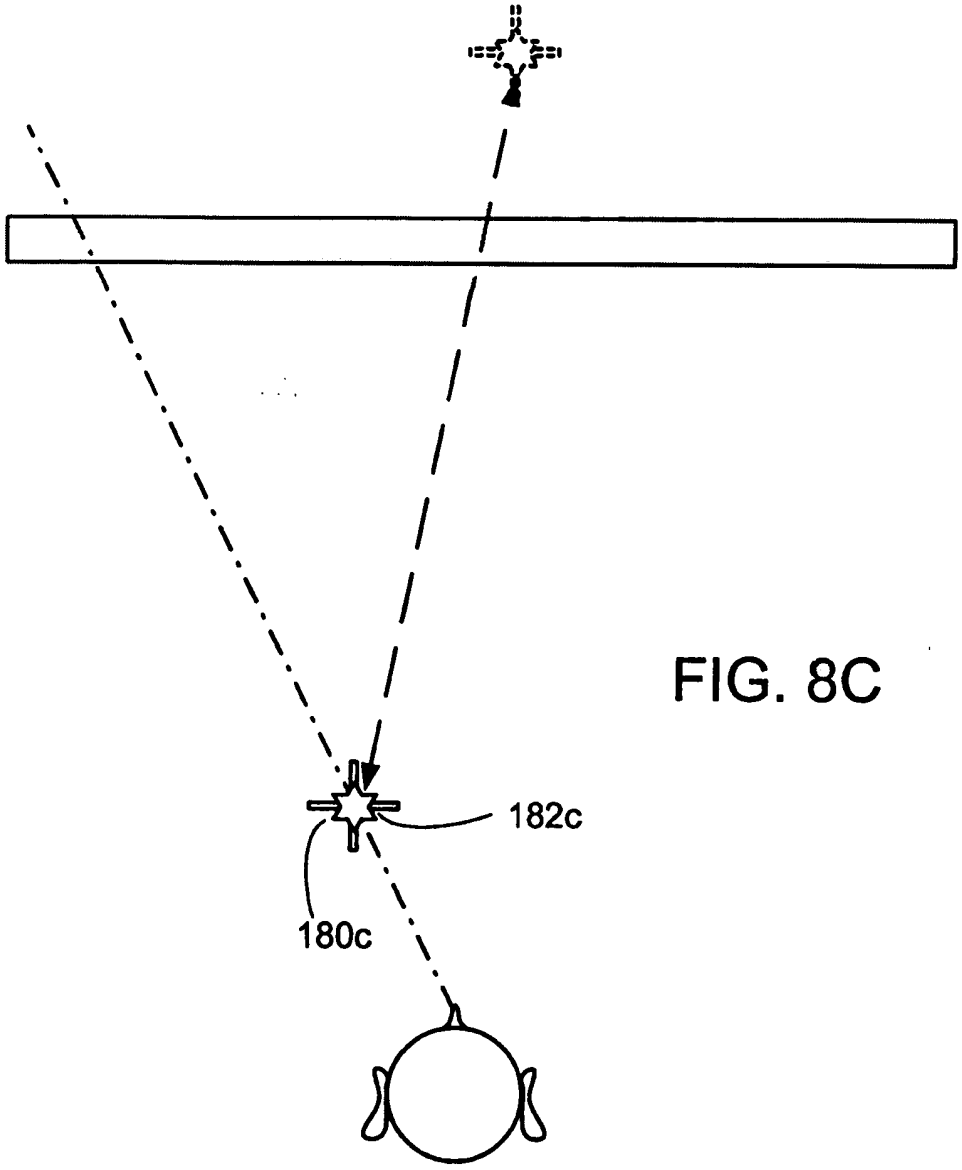


FIG. 8C

= Audio Image

= Visual Image

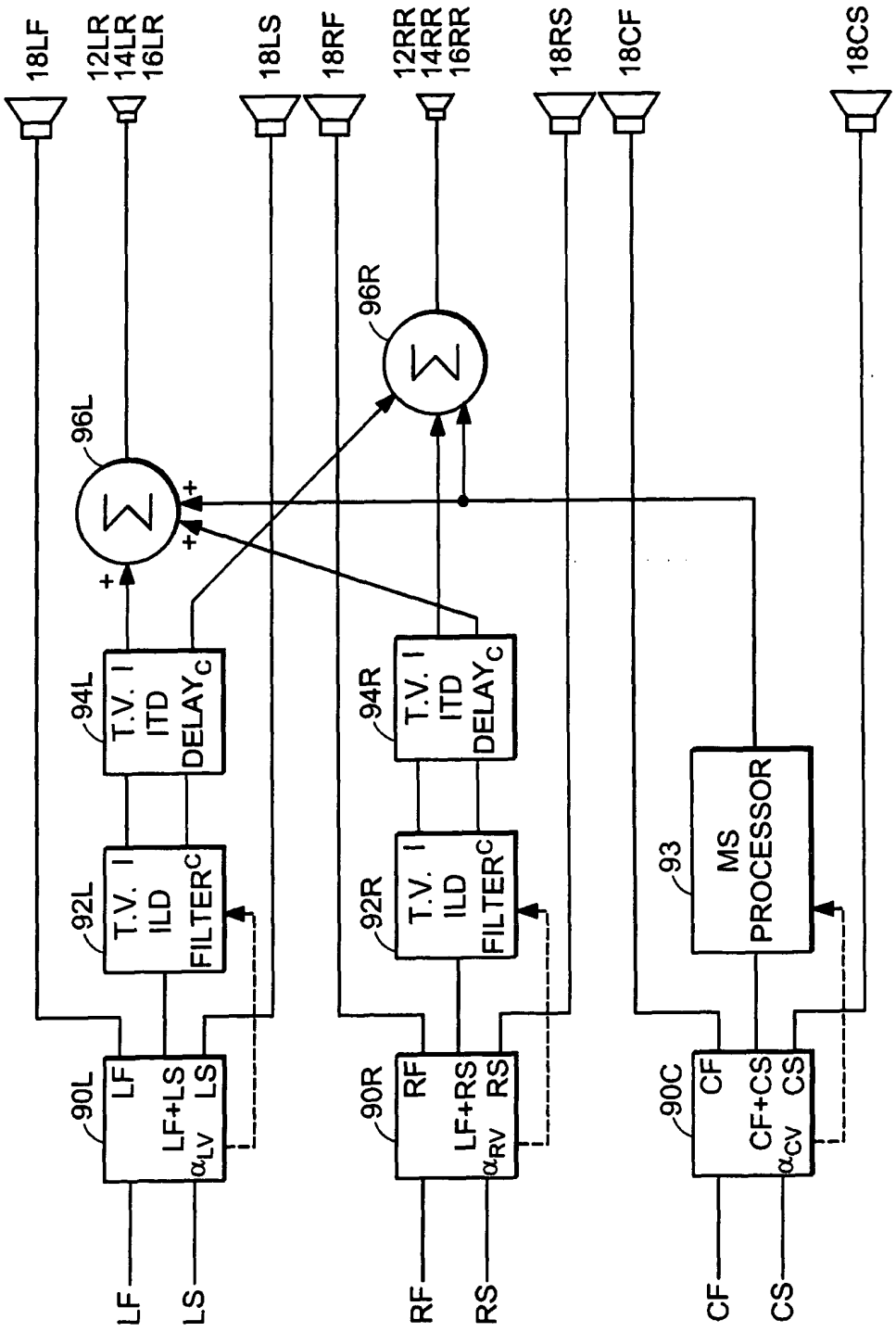

18LF
12LR
14LR
16LR
18LS
18RF
12RR
14RR
16RR
18RS
18CF
18CS
96L
96R
94L
T.V. I
ITD
DELAY$_C$
94R
92L
T.V. I
ILD
FILTER^C
92R
93
MS
PROCESSOR
90L
LF
LF+LS
LS
α_{LV}
90R
RF
LF+RS
RS
α_{RV}
90C
CF
CF+CS
CS
α_{CV}
+
LF
LS
RF
RS
CF
CS

FIG. 9A

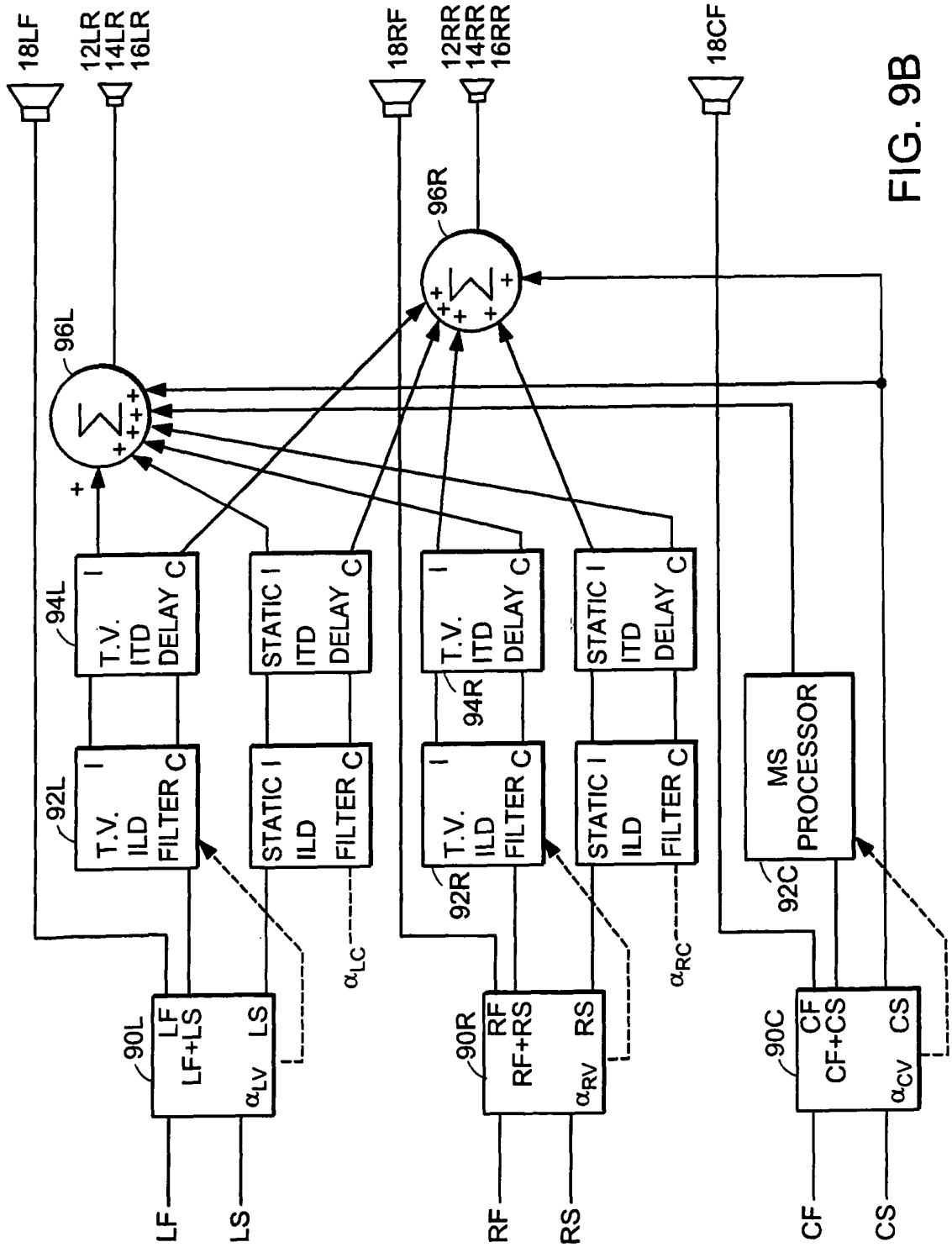

18LF
12LR
14LR
16LR
18RF
12RR
14RR
16RR
18CF
96L
96R
94L
94R
92L
92R
92C
90L
90R
90C
T.V. ITD DELAY
STATIC ITD DELAY
T.V. ILD FILTER
STATIC ILD FILTER
MS PROCESSOR
LF
LF+LS
LS
RF
RF+RS
RS
CF
CF+CS
CS
α_{LV}
α_{LC}
α_{RV}
α_{RC}
α_{CV}

FIG. 9B

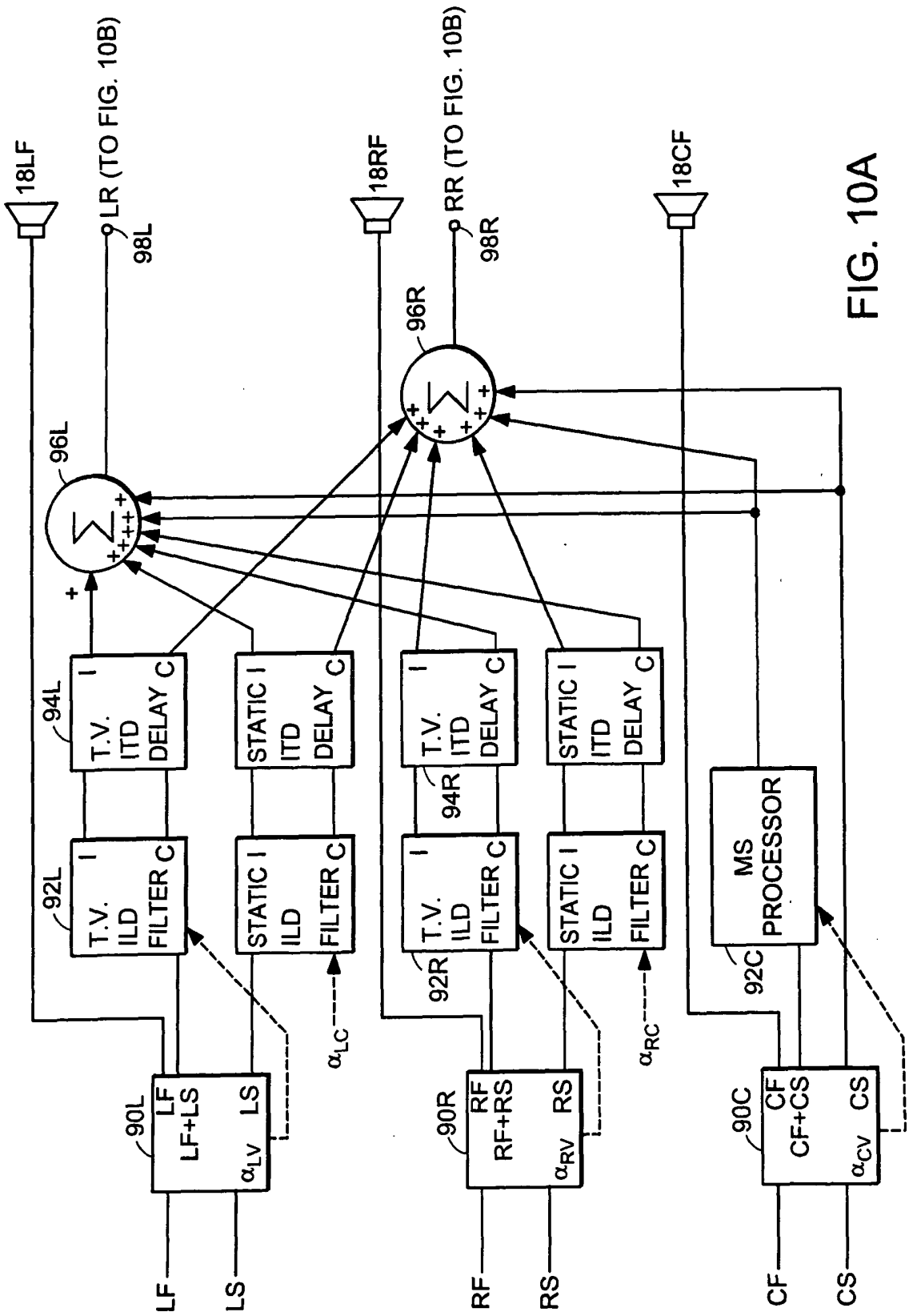

18LF
LR (TO FIG. 10B)
98L
18RF
RR (TO FIG. 10B)
98R
18CF
96L
96R
94L
T.V. ITD DELAY
STATIC ITD DELAY
94R
92L
T.V. ILD FILTER
STATIC ILD FILTER
92R
MS PROCESSOR
92C
90L
LF LF+LS LS
90R
RF RF+RS RS
90C
CF CF+CS CS
α_{LV}
α_{LC}
α_{RV}
α_{RC}
α_{CV}
LF
LS
RF
RS
CF
CS

FIG. 10A

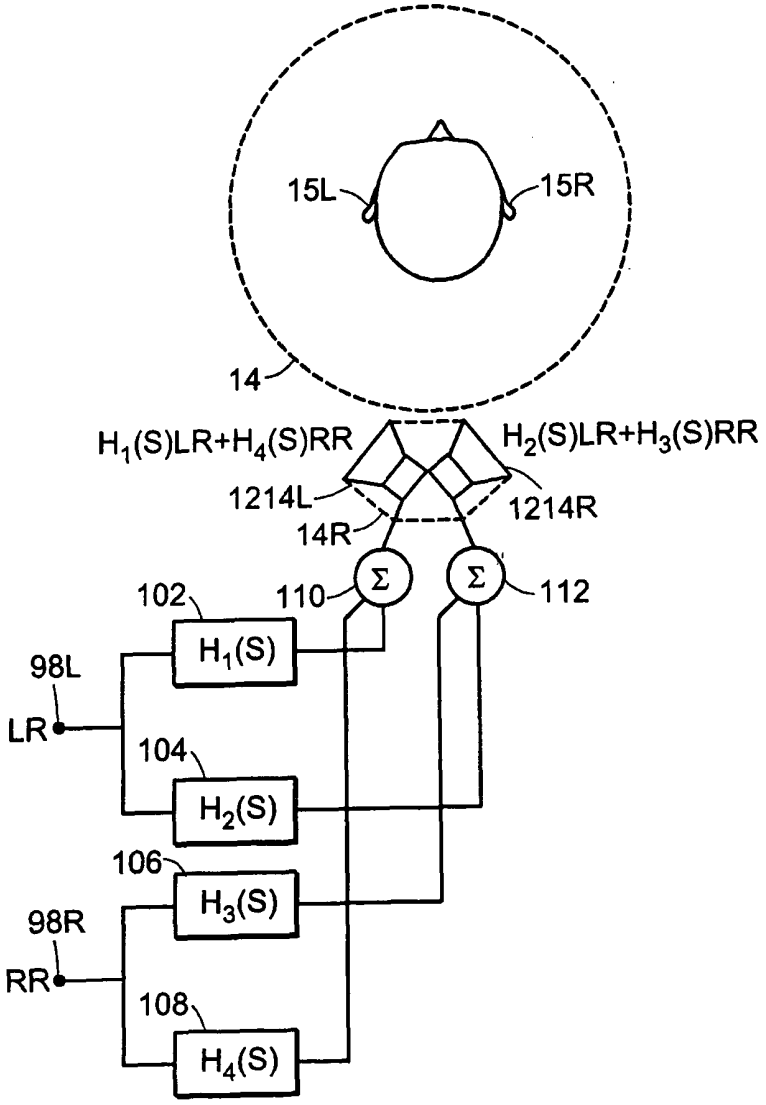

15L
15R
14
$H_1(S)LR+H_4(S)RR$
$H_2(S)LR+H_3(S)RR$
1214L
1214R
14R
Σ
Σ
102
110
112
$H_1(S)$
98L
LR
104
$H_2(S)$
106
$H_3(S)$
98R
RR
108
$H_4(S)$

FIG. 10B

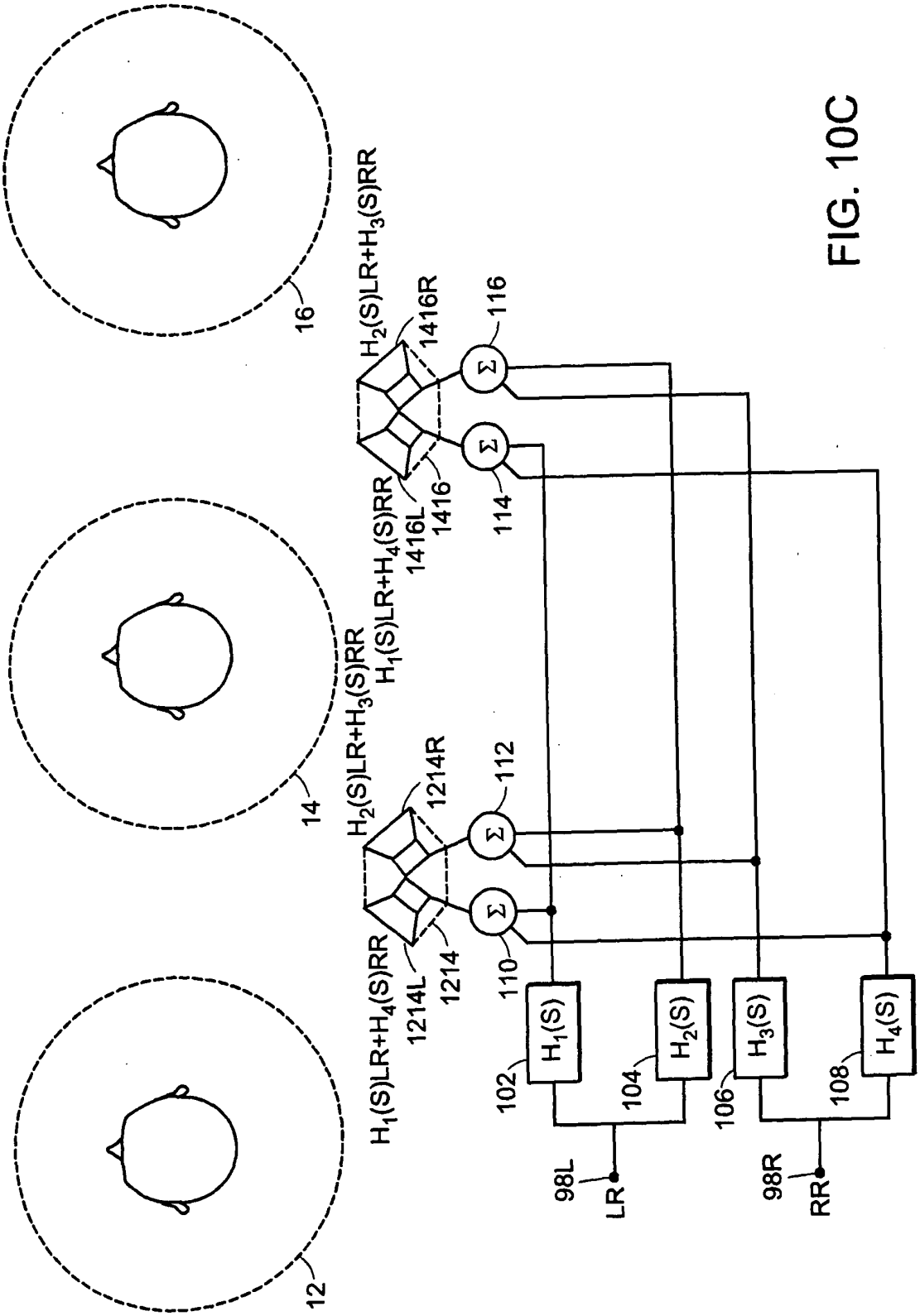

16
14
12
$H_2(S)LR+H_3(S)RR$
$H_1(S)LR+H_4(S)RR$
$H_2(S)LR+H_3(S)RR$
$H_1(S)LR+H_4(S)RR$
1416R
1416
1416L
1214R
1214
1214L
116
114
112
110
$H_1(S)$
$H_2(S)$
$H_3(S)$
$H_4(S)$
102
104
106
108
98L
LR
98R
RR

FIG. 10C

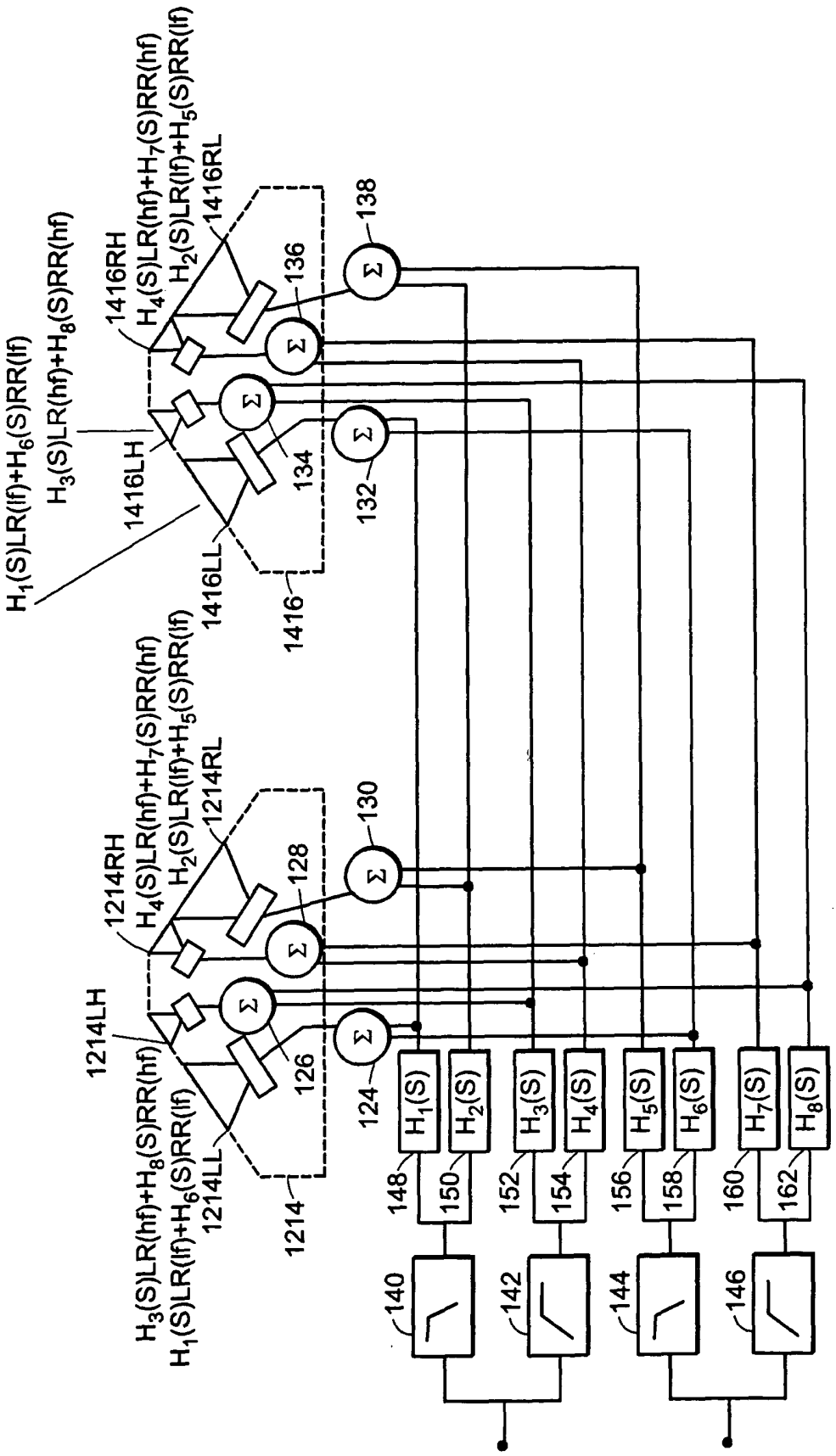

1416
1416LH
1416LL
1416RH
1416RL
1214
1214LH
1214LL
1214RH
1214RL
$H_1(S)LR(lf)+H_6(S)RR(lf)$
$H_3(S)LR(hf)+H_8(S)RR(hf)$
$H_4(S)LR(hf)+H_7(S)RR(hf)$
$H_2(S)LR(lf)+H_5(S)RR(lf)$
$H_3(S)LR(hf)+H_8(S)RR(hf)$
$H_1(S)LR(lf)+H_6(S)RR(lf)$
$H_4(S)LR(hf)+H_7(S)RR(hf)$
$H_2(S)LR(lf)+H_5(S)RR(lf)$
$H_1(S)$
$H_2(S)$
$H_3(S)$
$H_4(S)$
$H_5(S)$
$H_6(S)$
$H_7(S)$
$H_8(S)$
124
126
128
130
132
134
136
138
140
142
144
146
148
150
152
154
156
158
160
162

FIG. 10D

FIG. 11A

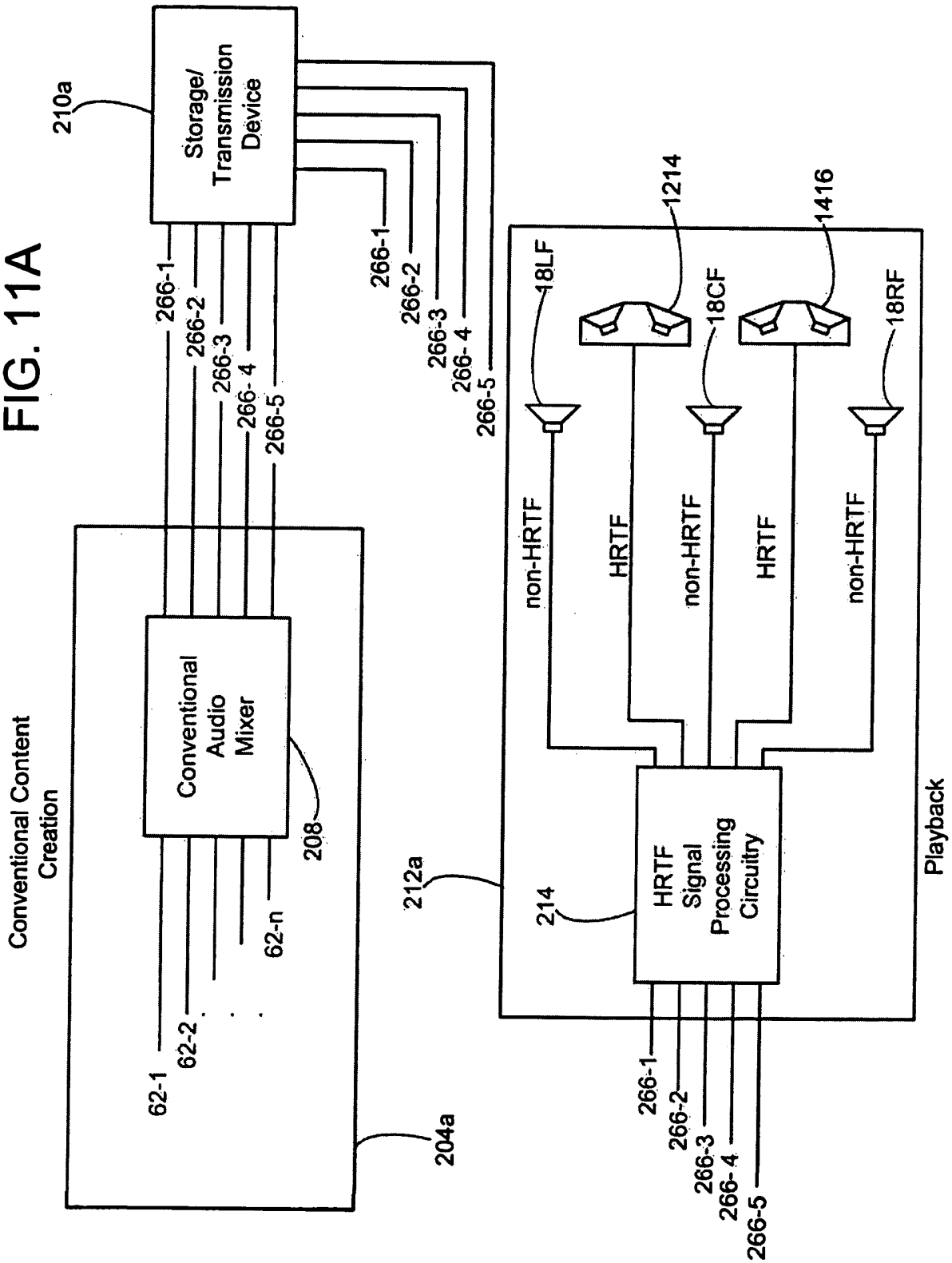
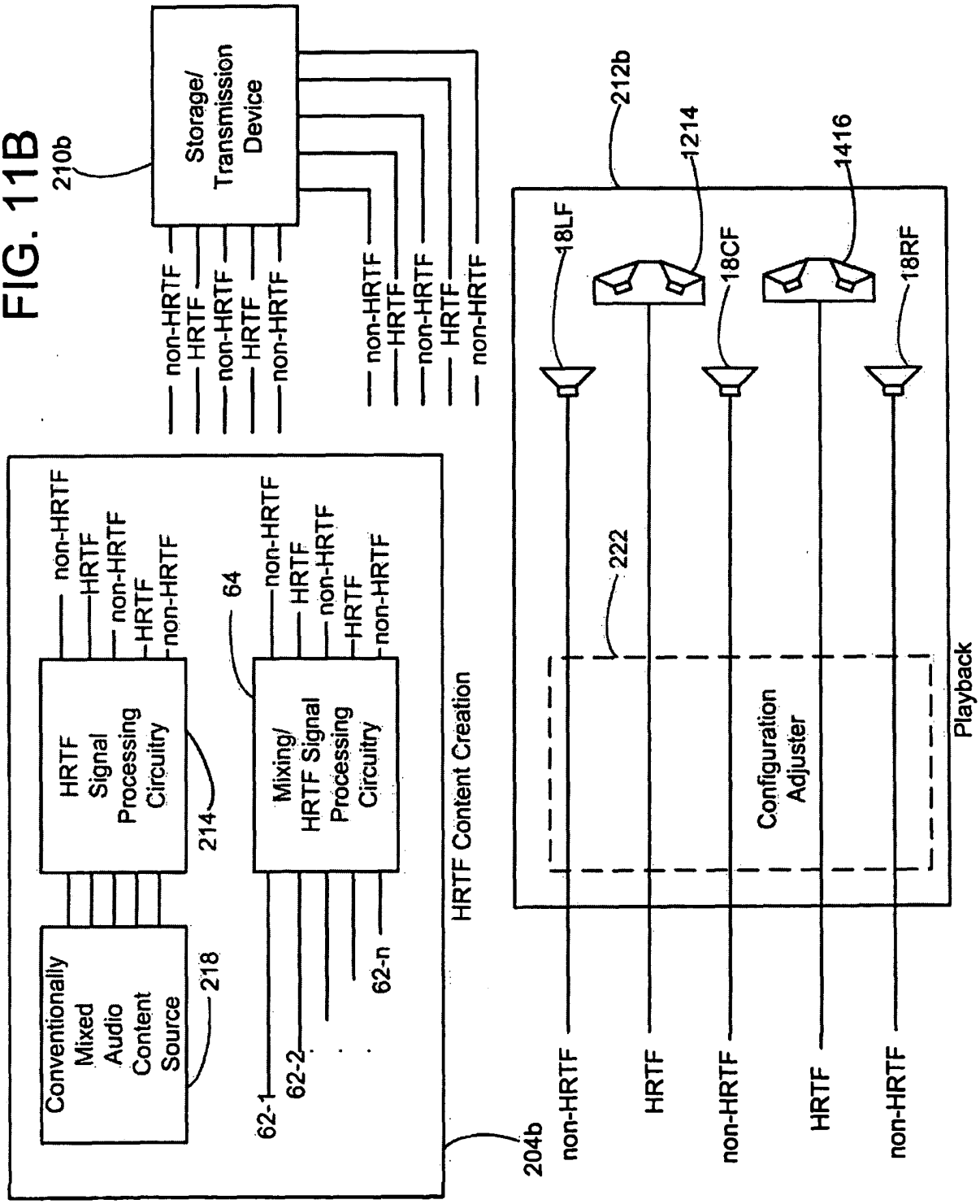

Storage/ Transmission Device
210a
266-1
266-2
266-3
266-4
266-5
Conventional Content Creation
Conventional Audio Mixer
208
62-1
62-2
62-n
204a
212a
214
HRTF Signal Processing Circuitry
1214
1416
18LF
18CF
18RF
non-HRTF
HRTF
non-HRTF
HRTF
non-HRTF
Playback

FIG. 11B


210b
Storage/ Transmission Device
non-HRTF
HRTF
non-HRTF
HRTF
non-HRTF
non-HRTF
HRTF
non-HRTF
HRTF
non-HRTF
HRTF Content Creation
HRTF Signal Processing Circuitry
214
Mixing/ HRTF Signal Processing Circuitry
64
Conventionally Mixed Audio Content Source
218
62-1
62-2
62-n
204b
212b
1214
1416
18LF
18CF
18RF
222
Configuration Adjuster
Playback
non-HRTF
HRTF
non-HRTF
HRTF
non-HRTF